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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,249	11/18/2003	Olivier Menut	00-GR1-408DIV	6478
23334	7590	08/18/2005	EXAMINER	
FLEIT, KAIN, GIBBONS, GUTMAN, BONGINI & BIANCO P.L. ONE BOCA COMMERCE CENTER 551 NORTHWEST 77TH STREET, SUITE 111 BOCA RATON, FL 33487			WEISS, HOWARD	
			ART UNIT	PAPER NUMBER
			2814	
DATE MAILED: 08/18/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

**Office Action Summary**

Application No.

10/716,249

Applicant(s)

MENUT ET AL.

Examiner

Howard Weiss

Art Unit

2814

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-13 ~~is~~ are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-13 ~~is~~ are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/044,286.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1103</u> . | 6) <input type="checkbox"/> Other: _____  |

Attorney's Docket Number: 00-GR1-408DIV

Filing Date: 11/18/03

Continuing Data: Division of 10/044,286 (1/11/02 now U.S. Patent No. 6,670,657)

Claimed Foreign Priority Date: 1/12/01 (FRX)

Applicant(s): Menut et al. (Gris)

Examiner: Howard Weiss

***Priority***

1. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence(s) of the specification or in an application data sheet by identifying the prior application by application number (37 CFR 1.78(a)(2) and (a)(5)). If the prior application is a non-provisional application, the specific reference must also include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 to 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammerl et al. (U.S. Patent No. 5,543,348), Thapar (U.S. Patent No. 6,580,123) and ITDB 1988.

Hammerl et al. show most aspects of the instant invention (e.g. Figures 4) including:

- producing an initial substrate **10**
- forming a capacitive trench **103** by depositing first **101** and second **102** layers on the initial substrate, etching said trench, lining the walls of the trench with a thermal oxide **106**, filling the trench with a highly doped polycrystalline silicon (pSi) **107** and etching the pSi so the fill level is below the surface of the initial substrate
- recessing **110** the initial substrate at the trench
- depositing a layer of amorphous material **108** and then performing a thermal anneal
- forming an n+ surface diffusion region **126** using arsenic and phosphorus

Hammerl et al. do not show amorphizing around the periphery of the recess, growing epitaxially an upper substrate layer and performing a CMP operation. Thapar teach (e.g. Column 4 Lines 4 to 13) to amorphize around a recess to increase the rate of oxide growth. It would have been obvious to a person of ordinary skill in the art at the time of invention to amorphize around a recess as taught by Thapar in the process of Hammerl et al. to increase the rate of oxide growth.

ITDB 1988 teach to grow an epitaxial layer **P-EPI** on a substrate to reduce the potential for hot electron storage node discharges (see second paragraph of DISCLOSURE TEXT). It would have been obvious to a person of ordinary skill in the art at the time of invention to grow an epitaxial layer on a substrate as taught by ITDB 1988 in the process of Hammerl et al. to reduce the potential for hot electron storage node discharges. Additionally, it is common, and therefore obvious, to use CMP to planarize substrates.

5. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammerl et al., Thapar, and ITDB 1988, as applied to Claim 6 above, and further in view of Chi et al. (U.S. Patent No. 6,171,923).

Hammerl et al., Thapar, and ITDB 1988 show most aspects of the instant invention (Paragraph 4) except for selectively etching the first layer and upper portion of the trench fill to form lateral cavities. Chi et al. teach (e.g. Figure 3) to form lateral cavities **6b** to increase capacitor surface area (Column 3 Lines 31 to 34). It would have been obvious to a person of ordinary skill in the art at the time of invention to form lateral cavities as taught by Chi et al. in the process of Hammerl et al., Thapar, and ITDB 1988 to increase capacitor surface area.

### ***Conclusion***

6. Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.
7. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit

Art Unit: 2814

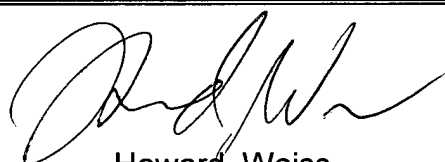
2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.

9. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 438/ 44, 90, 388	8/15/05
Other Documentation: PLUS Analysis Report	8/12/05
Electronic Database(s): EAST	8/12/05

HW/hw  
16 August 2005



Howard Weiss  
Primary Patent Examiner  
Art Unit 2814